LSA Design, Inc.
One Financial Plaza
120 S. Sixth Street
Suite 1700
Minneapolis, MN 55402
T. 612.339.8729
F. 612.339.7433
www.lsadesigninc.com

Planning
Architecture
Urban Design

May 7, 2010

Mr. Jim Erchul
Executive Director
Dayton's Bluff Neighborhood Housing Services, Inc
823 East 7th Street
St. Paul, MN 55106-5016

RE: Executive Summary of Structural Assessment, 208 Bates Avenue

Dear Mr. Erchul:

LSA Design, Inc. and our sub consultant, Ericksen Roed and Associates have completed our preliminary assessment of the four-plex structure located at 208 Bates Avenue. The preliminary assessment is based on visual observation of the existing condition of the interior and exterior of the building. The extent of these observations is noted on the attached report. The conclusion of the preliminary assessment involves a number of recommendations that relate to the failures of two elements:

1. The brick façade was attached to the wood framed structure via square steel nails that have deteriorated over time. Two structural remedial options are identified in the attached report. The option selected will need to consider much more than the structural implications due to existing environmental contamination as well as constructability of vapor barriers and insulation. The suitability of the existing brick for re-use would also need to be determined since it appears to be porous and soft.

2. There appears to be significant differential settlement of the foundation creating sloping floors and bowed walls. The majority of the interior walls have been remodeled recently which removed much of the resulting distressed elements. The source of the movement would have been easier to identify prior to this occurring. Without construction documents, the walls and footings will need to be exposed in order to design the remedial foundation work necessary to limit the ongoing settlement.

The attached report identifies other structural elements that require additional information to analyze. If requested, we can also assist with demolition and restoration documents that address the environmental and life safety requirements, although they appear to be more significant than the property would warrant.

Please let me know if you have any questions or comments on this report, and how you would like to proceed.

Thank you,

William Fossing, PE
Principal

Enclosure ERA May 07,2010 Assesment
CC. Jeffery Garetz, Load-bearing Inc
Mike DeSutter, Ericksen Roed and Associates

Ericksen Roed & Associates
Structural Engineers
2550 University Avenue West Ste 201-S
Saint Paul, Minnesota 55114-1901
Telephone: 651-251-7570
Facsimile: 651-251-7578

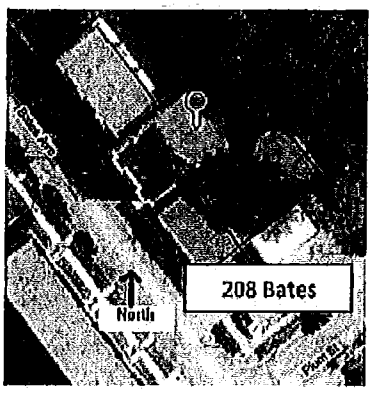
May 7, 2010

William Fossing
LSA Design, Inc.
120 South Sixth Street
Suite 1700
Minneapolis, MN 55402

Re: 208 Bates – Structural Assessment
St. Paul, MN
ERA Commission Number: 2010-096

Mr. Fossing:

We have conducted a structural assessment of the four unit residential building at 208 Bates on the east side of St. Paul, MN. This assessment is based on a visual walk-through on May 3, 2010. Existing finishes were not removed, interior walls and ceilings were sheathed and generally not available for observation, and the roof was not accessed.

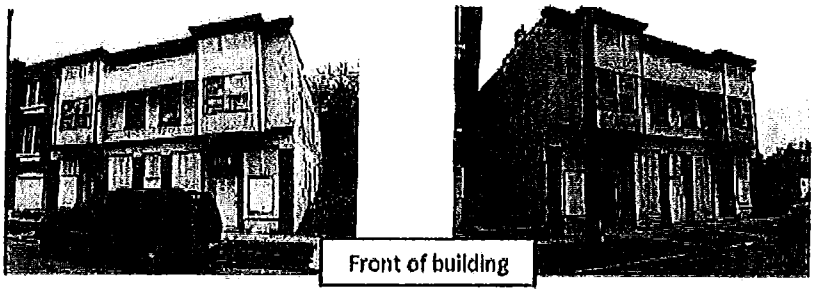


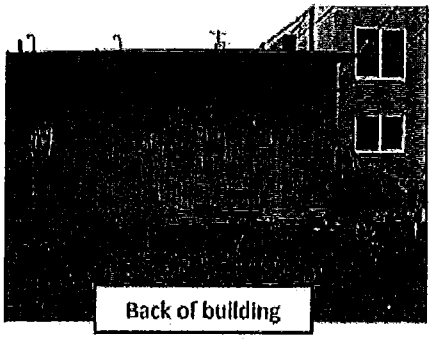
The intent of this report is to address the structural condition of the building as observed. It is not the intent of this report to address conditions that were not accessible. It is also not the intent of this report to address environmental issues or contamination; however, these items are noted where observed.

Existing Building Description

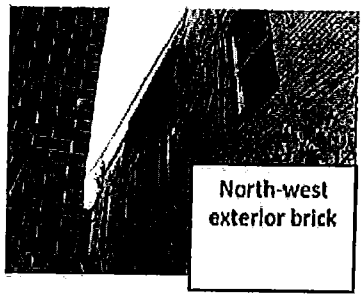
The existing building is estimated to have been built in 1880. The building has a basement and two floors. Each floor has two units for a total of four. The exterior grade is near the first floor elevation at the front of the building and slopes up to the second floor elevation at the back of the building.

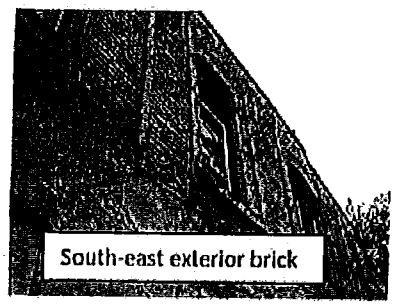
The roof structure is generally flat and sloped slightly to drain. The exterior bearing walls were observed to be 2x4 wood framed in one location where the interior wall was opened. The exterior finishes are a mixture of brick and wood paneling.


Front of building


Back of building

Structural Condition


North-west exterior brick


South-east exterior brick

A. **Exterior brick**

Observations:

1) A large portion of the brick along the north-west wall has fallen off from the wall. The exterior wood sheathing was still in place.
2) The south-east wall brick has been secured with wood planks securing the brick from falling off the building.
3) Wall sheathing boards were pulled away from the 2x4 wall studs in one location observed.

Discussion:

The existing brick was originally secured to the sheathing with box nails working as ties. Over the years these nails have deteriorated and vanished, thus leaving the brick with no lateral support. Without lateral support, the brick is susceptible to falling from the building, creating a hazardous situation for anyone in the vicinity.

Recommendations:

1) The brick should be completely removed from the building and a new brick wall should be built with galvanized ties for lateral support to the building structure. Prior to installation of new brick veneer, the exterior wall sheathing boards should be securely fastened to the wall studs.
2) Alternatively, a post installed re-securing system for the brick could be used; however, the existing wall sheathing boards would have to be fastened to the existing wall studs from the inside. This would require all interior sheathing on the exterior walls to be completely removed.

B. **Exterior walls**

Observations:

1) There are a number of large openings and cracks in the exterior walls that have allowed moisture and critters into the walls over the years. Deterioration and damage may have occurred, but could not be observed at this time. It is reasonable to assume that infiltration by water or critters is causing deterioration of the structure.

Recommendations:

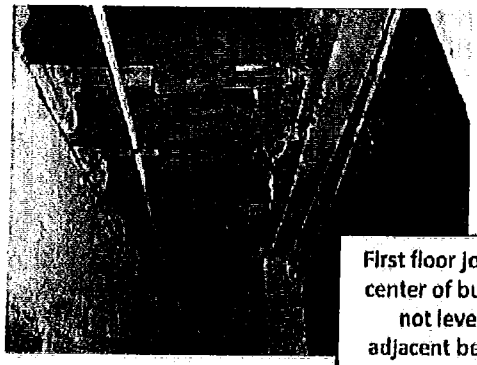
1) All interior sheathing will need to be removed in order to assess the damages further.
2) Structural members that have been damaged should be replaced or repaired.
3) Vapor barrier and waterproofing should be adequately designed in order to prevent further damage.

C. **Interior floors levelness / foundation settlement**

Observations:

1) The floors in each unit are visibly not level. Generally the floors slope down towards the centerline of the building. Upon observation of the basement, it appears that this is due to settlement of the interior bearing walls.

2) Interior stairs are sloping from side to side indicating differential settlement at the center bearing walls.
3) First floor joists at the centerline of the building are not level due to the settlement of the interior bearing walls.
4) Existing floor joists observed in the basement appeared to be in good condition.



First floor joists at center of building not level – adjacent bearing walls have settled

Recommendations:

1) Improvements to the foundations at the interior walls along with jacking and leveling of the floor and roof structure will be necessary in order to achieve levelness of the floors. The wall sheathing on all walls within the interior of the building will need to be removed in order to do this, otherwise they will crack and work against the jacking effort.
2) Without improving the foundations there is no indication that the settlement will stop.

D. Basement foundation walls

Observations:

1) The basement exterior foundation walls were generally made of limestone. The walls appeared to be plumb and straight. Moisture and mold is observable throughout the basement. This indicates that water is infiltrating through the walls, likely on the back side where the grade is high. Due to the irregular nature and inherent cracking of limestone walls, it is difficult to identify specific locations where the water is infiltrating.

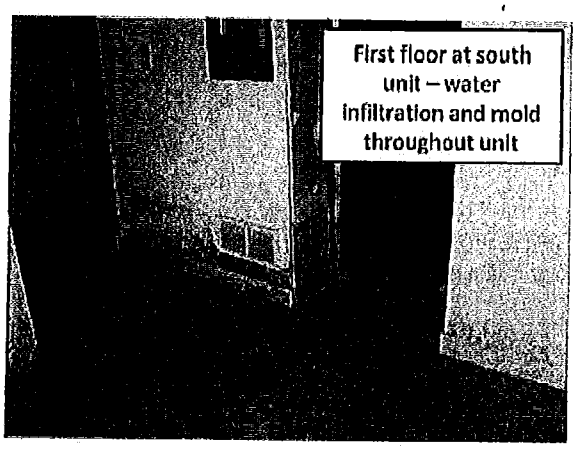
Recommendations:

1) These walls were not observed to be in distress; however, if water proofing is applied to the exterior face of the foundation wall, the existing wall may not be adequate to support the additional hydrostatic lateral pressures.

E. Interior walls and ceilings

Observations:

1) The walls and ceilings were covered with drywall and painted white, so the structure was not observable. However, it was apparent that there has been moisture in the walls and ceilings. Interior finishes have been damaged by water and mold.
2) Most of the windows appeared to have mold around the base of the window.
3) The first floor units in the back of the building had large amounts of water damage and mold growing on the walls, ceilings, and floors. Since the back of the building at first floor is below grade, it is likely that ground water is seeping through the wall.
4) Some walls are noticeably out of plumb and slightly sagging.



First floor at south unit – water infiltration and mold throughout unit

Recommendations:

1) If water proofing is applied to the exterior face of the below grade walls, the existing wall may not be adequate to support the additional hydrostatic lateral pressures.
2) In order to assess the condition of the bearing walls and the damage that the moisture infiltration has done to the structure, it will be necessary to remove the interior sheathing on the ceilings and walls throughout the building.
3) Remove or reinforce any structural framing that has deteriorated due to water damage.

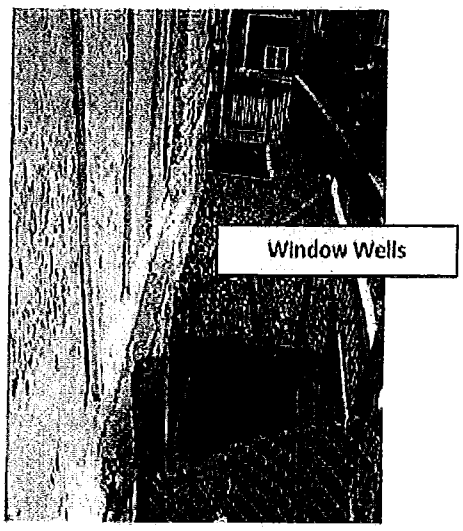
F. Window wells

Observations:

1) Window wells have been constructed with plywood and 2x wood framing retaining the earth pressures. This construction is not code compliant.

Recommendations:

1) Remove and replace non-compliant construction.



Window Wells

G. Exterior concrete at building entrances:

Observations / recommendations:

1) Some minor removal and replacement of concrete slabs at the front entrances will be necessary.

H. Front second floor cantilevered structure:

Observations:

1) The second floor at the front of the building that cantilevers out over the front wall was observed to deflect at the end of the cantilever. The structural framing members were not visible.

Recommendations:

1) In order to level the framing, the floor sheathing would need to be removed and a structural analysis and retrofit design will need to be provided for the cantilevered framing.

Please advise if you have any questions or comments.

Sincerely,

Terri Quimby

Terri J. Quimby, P.E., LEED AP
Structural Engineer
Ericksen Roed & Associates